

# Dahlgren: A Vital Mission

June 2005

A Dahlgren Public Affairs Fact Sheet

Research, development, test,  
and evaluation for:

- Military safety testing
- Integrated warfare systems
- Weapons and ammunition
- Sensors and directed energy
- Homeland and Force (military personnel and equipment) protection

The mission of the Navy at Dahlgren focuses on research, development, test, and evaluation (RDT&E) in the fields of military safety testing, integrated warfare systems, weapons and ammunition, sensors and directed energy, and homeland and force (military personnel and equipment) protection.

## Military Safety Testing

When aboard ship, sailors literally sleep with their weapons. Therefore, it is important to ensure that these weapons and every lot of ammunition that goes to the fleet are tested for stability and safety under a variety of conditions. For instance, if sailors handling a projectile drop it by accident, an explosion could occur, potentially resulting in serious damage and injury, even loss of life. To help design projectiles that will not explode if dropped, we test their stability by dropping them from a height of 40 feet.



Drop test facilities

Other tests are conducted to ensure that weapons and ammunition will withstand a range of environmental conditions, including extreme heat, cold, and humidity; shock; vibrations; and electromagnetic energy (such as radio and cell phone signals).

For instance, Dahlgren is an advanced RDT&E center for determining the adverse effects electromagnetic energy can have on ammunition or electro-explosive devices. These effects include premature firing or failure to fire. Test programs in this field are a growing activity at Dahlgren.

## Integrated Warfare Systems

As recently as Desert Storm (early 1990s), one branch of the armed forces could not communicate or operate effectively with another. Waste and unnecessary loss of life were the unfortunate result. Technology has changed this by allowing the weapons and communications systems of all branches of the armed forces to work together. This is called integrated warfare and has become absolutely critical to military effectiveness.

The first ever integrated warfare system was Dahlgren's Aegis. It remains the most successful. Today, Dahlgren tests, upgrades, and ensures the seamless functioning of multiple integrated warfare systems.



Aegis Combat Information Center

## Weapons and Ammunition

Dahlgren uses its resources to conduct a variety of tests to ensure the safety and effectiveness of our military's inventory of naval guns, ammunition, and barrels. For instance, almost every naval gun barrel comes to Dahlgren for testing before going to the fleet. We inspect them and test them by firing rounds of ammunition under conditions that ensure their

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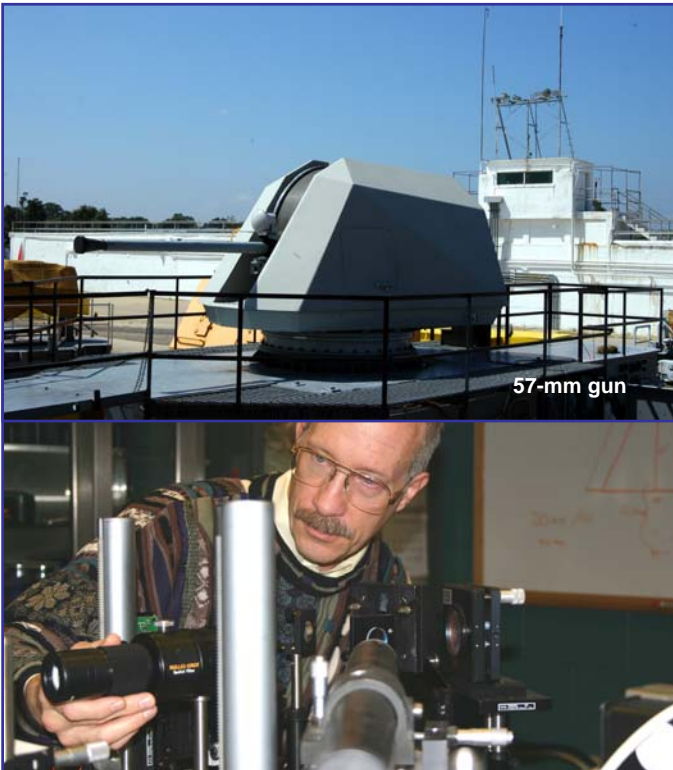
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proper function in the field. All forms of naval fuzes (detonating devices) also are thoroughly tested at Dahlgren, as it is essential that fuzes work as intended under all conditions. Finally, random samples of each lot of ammunition purchased by the Navy are sent to Dahlgren for testing and evaluation.

We also develop and test new forms of weapons and ammunition, such as "reactive materials." Under normal circumstances, reactive materials are stable; however, when they hit a target at very high speed, the impact causes a high-energy explosion. Reactive materials meet the Navy's need for ammunition that will detonate on target but is stable enough to ensure safe transport and storage on ships.



## Sensors and Directed Energy

Passive and active sensors are critical in modern warfare and homeland protection. Both kinds of sensors are tested at Dahlgren.

Passive sensors pick up signals from targets without emitting any potentially detectable energy. Examples include nighttime vision devices that amplify existing light, infrared detectors that sense heat emitted by targets, or surveillance television cameras. Active sensors send out their own signals in order to identify and track a given target or threat. Most active sensors involve the use of "directed energy." Lasers and high-powered microwaves are forms of directed energy.

Sensors allow our military to respond effectively to a wide range of threats, both conventional and unconventional, and help provide real-time situational awareness of the battlefield. For instance, sensors can

be used for all-weather night and day surveillance, precision targeting, detection and tracking of moving targets such as cruise missiles, and detection of mines and submarines.

High-power directed energy can also be used as a weapon. RDT&E of directed energy devices is a dynamic field at Dahlgren.

## Homeland and Force (Military Personnel and Equipment) Protection



Dahlgren's homeland and force protection RDT&E activities draw on the full range of expertise available on base. Examples include:

- Rapid prototyping of troop protection devices.
- Chemical/biological/radiological defense, including contamination avoidance, individual and collective protection, and decontamination.
- Testing of air filters used onboard ships.
- Gear entanglement systems that can stop small high-speed boats by launching a mesh of rope or similar material to entangle the boat or its propulsion system.
- Infrastructure Assurance Program, which identifies domestic assets crucial to support the Department of Defense, and assesses and remedies their vulnerabilities.